

# Dominique Maldague

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## Appointments

|     |  |                |
|-----|--|----------------|
| MIT | NSF Postdoctoral Fellow and Instructor             | 2021-(current) |
| MIT | Simons postdoctoral associate/pure math instructor | 2019-2021      |

## Education and training

|             |                      |                         |
|-------------|----------------------|-------------------------|
| UC Berkeley | Ph.D. in Mathematics | 2014-2019               |
|             | GPA: 4.0             | advisor: Michael Christ |
| UC Berkeley | B.A. in Mathematics  | 2011-2014               |
|             | GPA: 3.97            |                         |

## Awards, Fellowships, and Grants

|  |                        |                     |
|--|------------------------|---------------------|
| AMS-Simons Travel Grant  | MIT                    | July 2023-July 2025 |
|  | \$3000                 |                     |
| AIM Research Community<br>(co-org with Y. Ou, P. Yung, R. Zhang) | AIM                    | Jan 2022-Jan 2024   |
|  | \$575/community member |                     |
| NSF MSRFP  | MIT                    | July 2021-July 2024 |
|  | \$150,000              |                     |
| NSF Graduate Research Fellowship                                 | UC Berkeley            | May 2016 - May 2019 |
|  | \$35,000/yr            |                     |
| Mathematics Research Community Travel Grant                      | U of Pennsylvania      | 2018                |
| Chancellor's Fellowship  | UC Berkeley            | Aug 2014 - Dec 2015 |
|  | \$24,000/year          |                     |
| Dorothea Klumpke Roberts Prize in Mathematics                    | UC Berkeley            | 2014                |
| Highest Honors   | UC Berkeley Math       | 2014                |
| Outstanding Presentation, 2nd Prize at the YMC                   | Ohio State             | 2013                |

## Papers

1. **Small cap decoupling for the paraboloid in  $\mathbb{R}^n$**  (with L. Guth and C. Oh), available at <https://arxiv.org/abs/2307.06445>, 2023.
2. **On Polynomial Carleson operators along quadratic hypersurfaces** (with T. Anderson and L. Pierce), available at <https://arxiv.org/abs/2211.15865>, 2022.
3. **A sharp square function estimate for the moment curve in  $\mathbb{R}^3$** , available at <https://arxiv.org/abs/2210.17436>, 2022.
4. **An exceptional set estimate for restricted projections to lines in  $\mathbb{R}^3$**  (with S. Gan and L. Guth), available at <https://arxiv.org/abs/2209.15152>, 2022.
5. **On restricted projections to planes in  $\mathbb{R}^3$**  (with S. Gan, S. Guo, L. Guth, T. Harris, H. Wang), available at <https://arxiv.org/abs/2207.13844>, 2022.
6. **Small cap decoupling for the moment curve in  $\mathbb{R}^3$**  (with L. Guth), available at <https://arxiv.org/abs/2206.01574>, 2022, to appear in APDE.

7. **Amplitude dependent wave envelope estimates for the cone in  $\mathbb{R}^3$**  (with L. Guth), available at <https://arxiv.org/abs/2206.01093>, 2022.
8. **Sharp superlevel set estimates for small cap decouplings of the parabola** (with L. Guth and Y. Fu), available at <https://arxiv.org/abs/2107.13139>, 2021, to appear in *Rev. Mat. Iberoam.*
9. **A decoupling inequality for short generalized Dirichlet sequences** (with L. Guth and Y. Fu), available at <https://arxiv.org/abs/2104.00856>, 2021, to appear in *APDE*.
10. **Improved decoupling for the parabola** (with L. Guth and H. Wang), available at <https://arxiv.org/abs/2009.07953>, 2020, to appear in *JEMS*.
11. **Regularized Brascamp-Lieb inequalities and an application**, available at <https://arxiv.org/abs/1904.06450>, 2019, to appear in *Quart. J. of Math.*
12. **Special cases of power decay in multilinear oscillatory integrals** (with D. Dong and D. Villano), available at <https://arxiv.org/abs/1904.05428>, 2019, to appear in *Applicable Analysis*.
13. **A symmetrization inequality shorn of symmetry** (with M. Christ), *Trans. Amer. Math. Soc.* 373 (2020), no. 8, 5997–6028.
14. **An extremization problem for the Fourier transform: Quantitative analysis**, *J. Geom. Anal.* 29 (2019), no. 2, 1259–1301.
15. **An extremization problem for the Fourier transform: Existence**, available at <https://arxiv.org/abs/1802.01743>, 2018.

### Academic Work Experience

MIT Instructor of record, Course 18100Q, Real Analysis—most advanced version of undergraduate analysis offered, included a supplemental unit on written communication (Fall 2022)  
 MIT UROP, supervised an MIT undergraduate student in a reading course about Wolff’s harmonic analysis notes (Winter 2021)  
 MIT Recitation instructor, Course 18.01, Single variable calculus (Fall 2019, Fall 2020)  
 UC Berkeley Teaching Assistant, Math 202B, Graduate Introduction to Topology and Analysis (Spring 2015), Math 1B, Calculus (Spring 2014), Math 54, Linear Algebra and Differential Equations (Fall 2013), Math 16B, Analytic Geometry and Calculus (Spring 2013),  
 Cornell University REU in Mathematics (Summer 2013)  
 UC Berkeley Grader, Math 54, Linear Algebra and Differential Equations (Summer 2012)

### Outreach activities

AIM Research Community: organized the Buddy Program to facilitate relationships within the harmonic analysis community, with an emphasis on addressing diversity, 2022-present.  
 MIT: organizing member of MIT Women in Math and member of the math department Diversity Committee, 2021-present.  
 UC Berkeley: member of the Noetherian ring, a women in math group, 2014-2019. Organized a visit with a local chapter of the Girl Scouts of America to speak with women in math.